

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW MEXICO

AIG AVIATION INSURANCE, a foreign
corporation; and CURTIS AND CURTIS,
INC., a New Mexico corporation,

Plaintiffs,

v.

No. CIV 09-0352 BB/LFG

AVCO CORPORATION d/b/a Lycoming
Engines, a foreign corporation; TEXTRON,
INC., a foreign corporation; and KELLY
AEROSPACE, a foreign corporation,

Defendants.

MEMORANDUM OPINION
ON DAUBERT HEARING RE JAMES IRVIN

THIS MATTER is before the Court on the *Motion of Defendant Kelly Aerospace Energy Systems, Inc., to Exclude the Opinion of James F. Irvin* [Doc. 73].¹ The Court having reviewed all submissions of counsel and taken both evidence and entertained oral argument on June 20, 2011, finds the *Motion* should be Denied.

Facts and Procedural Background

The Court will accept the factual background provided by the parties for purposes of this motion.

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Defendant Avco Corporation was added as a co-movant [Doc. 78].

On April 13, 2006, Blake Curtis was operating his company's Piper Malibu near Hope, New Mexico. At approximately 21,000 feet, the aircraft experienced a loss of power and began to lose cabin pressure. The engine continued to run for another eight minutes before losing all oil pressure. This litigation arose from the engine failure and damage to the Piper Malibu Mirage aircraft.

The claims against Kelly Aerospace rest on allegations that the engine failure resulted from loss of oil pressure, which was allegedly caused by the failure of the bearings in a turbocharger manufactured by Kelly. Plaintiffs sued Kelly for negligence, failure to warn, strict liability, and breach of warranties of merchantability and fitness for a particular purpose. The Court dismissed the breach of warranty claims as time-barred (Doc. 45).

The turbocharger in the aircraft was manufactured by Defendant Kelly. This was not the original turbocharger on the engine. The turbocharger was installed on this aircraft by Louisiana Aircraft on November 27, 2001, at the direction of Lycoming.

An initial examination of the aircraft was conducted by the Federal Aviation Administration ("FAA") on April 16, 2006, at the Artesia Municipal Airport. It showed oil streaks running along the full length of the bottom fuselage, which originated from the right side exhaust pipe. An examination of the airplane's engine showed the right hand turbocharger impeller blades were worn at the tips and some of the blades were

fractured. (FAA Rept. at 1a).² There was also “excessive play” in the compressor assembly. (*Id.*).

Later inspection involving the National Transportation Safety Board (“NTSB”) demonstrated damage to the oil seal at the impeller shaft. An examination of the bearings from the right side turbocharger revealed that their inner bores were rubbed and worn. The edges of the bearings were displaced and deformed. The seals in the turbocharger were destroyed. High carbon build-up was noted on the turbine rotor indicating that oil had been escaping out of the bearing cavity and leaking through the turbine side of the turbocharger. At issue is the cause.

Expert Opinions

A. *Irvin Report*

Plaintiffs’ expert, James Irvin, testified about his extensive background analyzing turbocharger failures. He also testified he had tested the same model engine and turbocharger extensively for another accident case. (His credentials were unchallenged by Defendants.)

Mr. Irvin produced a report dated May 6, 2008 (“Irvin Report”).³ The Irvin Report concludes that the subject engine failure was caused by “the failure of the turbocharger bearings which allowed the engine oil supply to be exhausted overboard.” (Irvin Rept. at 3). The Irvin Report recounts that “all of the observed conditions” in

² Pictures of this were introduced at the Court’s evidentiary hearing.

³ Copy attached to Plaintiffs’ Response [Doc. 83] as Exhibit A.

examination of the turbocharger “indicate that the bearings lost their ability to control the rotating group in the turbocharger.” *Id.* Mr. Irvin concluded the loss of the bearings’ ability to control the rotating group in the turbocharger was most likely caused by the “softness” of the bearings. Mr. Irvin sent the bearings to SEAL Laboratories in El Segundo, California, to test for hardness. (Irvin Rept. at 2). The bearings were measured using the Rockwell 15-T Scale. *Id.* He testified the standard of testing the bar stock from which the bearings were made was no longer possible in this case. This testing revealed that the bearings from the right side turbocharger were “very soft.” *Id.* Specifically, they measured 62.2 on the compressor side and 70.0 on the turbine side. *Id.* A comparison test on the left side turbocharger bearings showed they were 76.0 on the compressor side and 73.0 on the turbine side. *Id.* at 2. According to Arun Kumar of SEAL Laboratories, this difference is “minor,” but unlike the bearings on the right turbocharger, those on the left turbocharger were not deformed. *Id.*

At the *Daubert* hearing, Mr. Irvin testified that while he was unable to obtain the industry standards for bearing hardness, “You can see by the physical evidence the way the bearings were extended into the bearing housing, into the shaft that they are too soft.”

Following the above testing and his overall inspection, Mr. Irvin’s opinion is that “the bearings lost their ability to control the rotating group in the turbocharger.” (Irvin Rept. at 3). This failure of the turbocharger bearings “allowed the engine oil

supply to be exhausted overboard,” which subsequently “caused the failure of the #5 connecting rod.” *Id.* These events caused the engine to seize and the propeller to stop. He concluded the bearings were too soft as they failed in normal use.

In his report, Mr. Irvin explains that these turbochargers spin up to 125,000 RPM, and “an out of balance condition on the rotating group for any reason will cause the shaft of the rotating group to contact the bearings.” *Id.* at 3. He adds that:

The bearings that support the shaft being soft allows the shaft to contact the bearings thus severely distorting the bearings. The more the bearings distort the more the shaft moves in an orbiting manner. This out of round rotation completely destroys the bearings and seals. When the seals are compromised the engine oil supply is depleted through the turbocharger. This results in an oil starvation in the engine and causes a catastrophic engine failure.

Id. at 3. Mr. Irvin notes that the FAA Service Difficulty Report indicates there is at least one additional aircraft that had a very similar situation to this indent. *Id.*

B. Knuteson Report

Defendants’ expert, Randall Knuteson, states that testing by Applied Technical Service Laboratories showed that the bearings in question “were not softer than ‘normal’ and met the specifications for bearings to be used in this type turbocharger.”⁴ Although agreeing that turbocharger bearings are relatively “soft” because they are made of aluminum alloy, he states that this type of bearing has “long been an industry standard” for aviation and automotive turbochargers. (Knuteson Aff. at ¶ 3). He claims that “excessive hardness is not required” because the bearings “freely rotate on

⁴ Knuteson Affidavit, attached to Kelly’s Mem at ¶ 3.

a boundary-layer of engine oil.” *Id.* It is his theory that the accident was caused by foreign object damage (“FOD”) from something “ingested by the engine.”

Mr. Irvin testified he did not feel the physical evidence supported this conclusion as there was no evidence of any abnormalities in the exhaust manifold. He also testified it would be impossible for a foreign object to go entirely through the blades without causing damage to even one blade of the turbocharger. He said a foreign object “would hit all the veins and obliterate them given a speed of 125,000 RPM. Mr. Irvin testified he saw only evidence of normal exhaust deposits and debris but no FOD.

Legal Standard

“FED[ERAL] R[ULE] OF EVID[ENCE] 702 imposes upon the trial judge an important ‘gate-keeping’ function with regard to the admissibility of expert opinions.” *Ralston v. Smith & Nephew Richards, Inc.*, 275 F.3d 965, 969 (10th Cir. 2001). To perform its gate-keeping duty, the district court engages in a two-pronged analysis, determining first whether an expert is qualified to render an opinion by “knowledge, skill, experience, training, or education” and, second, whether the expert’s opinions are “reliable” under the *Daubert*⁵ standards. *Ralston*, 275 F.3d at 969 (quoting FED. R. EVID. 702). Kelly’s challenges to Mr. Irvin’s opinion concern only the second strand of the inquiry, relating to the reliability of his methodology.

To be reliable, an expert’s scientific testimony must be grounded in the “methods and procedures of science,” and based on actual knowledge, not mere “subjective belief

⁵ *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 590 (1993).

or unsupported speculation.” *Daubert*, 509 U.S. at 590. Yet, although expert opinions “must be based on facts which enable [the expert] to express a reasonably accurate conclusion as opposed to conjecture or speculation, ... absolute certainty is not required.” *Goebel v. Denver & Rio Grande Western R. Co.*, 346 F.3d 987, 991-92 (10th Cir. 2003) (quoting *Gomez v. Martin Marietta Corp.*, 50 F.3d 1511, 1519 (10th Cir. 1995)). “The plaintiff need not prove that the expert is undisputably correct or that the expert’s theory is ‘generally accepted’ in the scientific community.” *Goebel*, 346 F.3d at 992 (quoting *Mitchell v. Gencorp Inc.*, 165 F.3d 778, 781 (10th Cir. 1999)). Rather, “the plaintiff must show that the method employed by the expert in reaching the conclusion is scientifically sound and that the opinion is based on facts that satisfy RULE 702’s reliability requirements.” *Id.*

Arguments

Defendants maintain that: “Mr. Irvin’s analysis completely fails to address foreign object damage (“FOD”) as the explanation for the engine failure. *Id.* at ¶¶ 5, 10. None of the evidence Mr. Irvin relies upon is inconsistent with FOD as the cause of the engine failure, and the facts indicate that FOD is the only reasonable explanation for the accident. *Id.* at ¶ 6.

It is not ground to exclude the testimony of an expert merely because it conflicts with other experts. *United States v. McBride*, 786 F.2d 45, 51 (2d Cir. 1986). Where the validity of an expert’s conclusion or results are contested, it is a jury question as to the weight of the evidence. *United States v. Wanoskia*, 800 F.2d 235, 238 (10th Cir. 1986).

The identification of such flaws in a generally reliable expert methodology is precisely the role of cross-examination. *Daubert*, 509 U.S. at 596; *Hemmings v. Tidyman's, Inc.*, 285 F.3d 1174, 1188 (9th Cir. 2002).

Moreover, as previously mentioned, Mr. Irvin testified at some length on cross-examination as to why he disagreed with Defendant's FOD theory. He said that when the NTSB tore down the turbocharger, they found only that the debris noted between the impeller and exhaust turbines was consistent with exhaust products. He flatly rejected defense counsel's assertion that exhaust deposits could be considered foreign objects. He also countered that he did "investigate the possibility of foreign object ingestion early on in the investigation, and ruled it out. And that was further confirmed by your expert's analysis when he only found the debris that you're discussing on one blade, on one vein."


The Tenth Circuit upheld the admissibility of an expert's methodology in an analogous context in *Bitler v. A.O. Smith Corporation*, 400 F.3d 1227 (10th Cir. 2004). The expert there considered the source of a gas leak which caused plaintiffs serious injury and property damage. Plaintiff's expert examined the physical evidence and concluded that in spite of a safety screen created by the defendant manufacturer, copper sulfide contamination had caused a gas leak from the pilot in the water heater. In affirming admission of the expert's process of elimination, Judge Lucero, speaking for the Court, opined:

In the present case, it is uncontroverted that if copper sulfide particles of sufficient size became lodged on the safety valve seat, then a gas leak substantial enough to cause the explosion in the Bitler's basement could occur. Whether or not that actually occurred is a question that may be answered by inference to the best explanation. We see no abuse of discretion, especially in light of our deferential standard of review, in the district court's admitting expert testimony that employs an expert's physical investigation, professional experience, and technical knowledge to establish causation in this case.

400 F.3d at 1238 (footnote omitted).

CONCLUSION

For the above stated reasons, the Court will DENY *Defendant Kelly Aerospace Energy Systems, Inc.'s Motion to Exclude Opinion of James F. Irvin* by separate order.

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BRUCE D. BLACK
Chief Judge